

Abstract

The present invention provides a high-throughput system for the ex-situ formation of a superconducting thin film, such as rare-earth-barium-copper-oxide (REBCO), atop a continuous length of buffered metal substrate tape by heating a buffered metal substrate tape coated with precursors of REBCO. These precursors, when heated and introduced to water vapor within a process chamber, decompose to form a functional superconducting thin film epitaxial to the buffer layer. A chamber such as a metalorganic chemical vapor deposition (MOCVD) reactor having showerhead and substrate heater assemblies designed for the creation of a long and wide deposition zone is well suited for use in the process the system. The chamber could be of cold-wall type where the walls are not heated or could of hot-wall type where the walls are heated.